CLAIMS

What is claimed is:

1.   A method of determining hydraulic conductivity of material surrounding a
conduit or borehole, comprising the steps of:

        sealably fastening an end of a flexible liner to a proximate end of the borehole;

        passing the liner along the borehole while allowing the liner to evert at an
eversion point moving through the borehole;

        measuring the eversion point's velocity;

        calculating the conductivity of the surrounding material from the velocity of the
eversion point.

2.   The method of claim 1 wherein the step of passing the liner comprises driving
the liner down the borehole.

3.   The method of claim 2 wherein driving the liner comprises pressurizing the
liner with a fluid.

4.   The method of claim 2 further comprising the step of monitoring the level of the
fluid in the liner.

5.   The method of claim 4 wherein the step of monitoring the fluid level comprises monitoring a pressure meter in the fluid within the liner.

6.   The method of claim 3 comprising the further steps of monitoring the pressure within the liner and monitoring liner tension to determine a driving pressure.

7.   The method of claim 3 comprising the further step of measuring fluid pressure in the hole below the everting end of the liner.

8.   The method of claim 1 wherein the step of passing the liner comprises withdrawing the liner upward in the borehole.

9.   The method of claim 7 comprising the further step of monitoring tension due to the resistance of the ascending liner.

10.   The method of claim 7 comprising the further step of measuring fluid pressure in the hole below the everting end of the liner.

11.   The method of claim 8 further comprising the step of measuring the flow rate of fluid produced from the top end of the liner.

12.   The method of claim 11 comprising the further step of calculating, from the monitored tension and the flow rate of fluid produced, the gross fluid flow rate inward into the borehole from the surrounding material from the segment of the hole at the everting end of the liner.

13.   The method of claim 2 wherein the step of calculating conductivity comprises determining a gross fluid flow rate outward into the surrounding material from the segment of the hole at the everting end of the liner.

14.   The method of claim 13 comprising the further step of monitoring for changes in velocity of the eversion point, wherein when the liner covers a flow path in a surrounding material, the gross fluid flow rate is reduced by the amount of flow in the flow path, concurrently causing a change in the eversion point's velocity.

15.   The method of claim 14 comprising the further step of plotting the eversion point's velocity versus borehole depth to locate changes in conductivity associated with changes in eversion point velocity.

16.   The method of claim 1 comprising the further steps of installing a secondary tube alongside the liner in the borehole, and supplying fluid via the secondary tube to the borehole.

17.   A method of determining physical characteristics of materials surrounding a subsurface borehole, the borehole having at least some ambient water standing therein, comprising the steps of:

sealably fastening an end of a flexible liner to a proximate end of the borehole;

driving the liner down the borehole while allowing the liner to evert at an eversion point descending the borehole;

continuously measuring the eversion point's descent velocity;

determining a gross flow rate of the ambient water outward into the surrounding material from a segment of the hole adjacent the eversion point of the liner.

18.   The method of claim 17 wherein driving the liner comprises pressurizing the liner with a fluid.

19.   The method of claim 18 comprising the further step of continuously monitoring the pressure in the fluid within the liner.

20.   The method of claim 18 comprising the further step of calculating conductivity from the gross flow rate outward into the surrounding material.

21.   The method of claim 20 comprising the further step of monitoring for changes in velocity of the eversion point, wherein when the liner covers a flow path in a surrounding material, the gross fluid flow rate is reduced by the amount of flow in the flow path, concurrently causing a change in the eversion point's velocity.

22.   The method of claim 21 comprising the further step of plotting the version point's velocity versus borehole depth to locate changes in conductivity associated with changes in eversion point velocity.

23.   The method of claim 1 comprising the further steps of:

installing a secondary tube alongside the liner in the borehole;

pulling the liner from the borehole;

and supplying fluid via the secondary tube to the borehole below the everting end of the liner.